



VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION:

The following heading has been inserted after the title and before line 1 of page 1:

Background of the Invention

Heading beginning at line 1, after the title, of page 1 has been amended as follows:

[TECHNICAL FIELD] Field of the Invention

Paragraph beginning at line 2 of page 1 has been amended as follows:

The present invention relates to a magnetic bearing apparatus provided with a touchdown bearing made of a pair of roller bearings and a pair of corrugated [plate-like] plate-shaped damper members inserted into an annular gap formed between the touchdown bearing and its retainer member and to a vacuum pump having the magnetic bearing apparatus [provided with this], and more particularly to an improvement in durability of a touchdown bearing and corrugated damper members for absorbing shock upon the touchdown and suppressing to a sufficiently low level a vibratory rotational frequency of a rotor relative to a rotational frequency of the rotor.

Heading beginning at line 11 of page 1 has been amended as follows:

BACKGROUND [ART] INFORMATION

Paragraph beginning at line 12 of page 4 has been amended as follows:

[In] The present invention provides a magnetic bearing apparatus provided at least with a rotor shaft, a radial magnetic bearing for supporting the rotor shaft in a radial direction, a thrust magnetic bearing for supporting the rotor shaft in an axial direction, a touchdown bearing composed of a pair of roller bearings arranged at a lower end portion of the above rotor shaft, and a pair of corrugated [plate-like] plate-shaped damper members inserted into an annular gap between the touchdown bearing and its retainer member, and to a vacuum pump provided [with this, an] the magnetic bearing apparatus. An object of the present invention is to securely maintain [keep on retaining] the pair of corrugated [plate-like] plate-shaped damper member in a predetermined position [without fail].

Heading beginning at line 23 of page 4 has been amended as follows:

[DISCLOSURE OF THE INVENTION] SUMMARY OF THE INVENTION

Paragraph beginning at line 1 of page 5 has been amended as follows:

In order to solve the above-noted problems, there is provided a magnetic bearing apparatus provided at least with a rotor shaft, a radial magnetic bearing for supporting the rotor shaft in a radial direction, a thrust magnetic bearing for supporting the rotor shaft in an axial direction, a touchdown bearing composed of a pair of roller bearings arranged to surround a lower end portion of the rotor shaft, a pair of corrugated [plate-like] plate-shaped damper members inserted into an annular gap disposed between the touchdown bearing and its retainer member and [a vacuum pump provided with this, being provided with] [a] positional offset preventing means for preventing positional offset of the corrugated [plate-like] plate-shaped damper [member] members disposed in the annular gap.

Paragraph beginning at before line 5 of page 6 has been amended as follows:

The present invention is also directed to a vacuum pump having the magnetic bearing apparatus according to the present invention.

The heading beginning at line 4 of page 7 has been amended as follows:

[BEST MODE FOR CARRYING OUT THE INVENTION] DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Paragraph beginning at line 5 of page 7 has been amended as follows:

[Preferable] Preferred embodiments of the present invention will now be described with reference to Figs. 1 to 7 in more detail.

Paragraph beginning at line 17 of page 8 has been amended as follows:

In Fig. 1 showing a first embodiment of the present invention, a cylindrical retainer member 9 serves as both the thrust bearing retainer member and the touchdown bearing retainer member. Namely, the retainer member 9 is the retainer member coated with resin mold and formed into a cylinder for receiving electromagnets constituting the thrust bearing 3a of Fig. 7. Then, the touchdown bearing 4, i.e., the pair of roller bearings 4a and 4b disposed in the upper and lower stages are received in the inner circumferential portion of the retainer member 9. The annular gap G is formed between the inner circumferential surface of the cylindrical

retainer member 9 and the outer races of the pair of roller bearings 4a and 4b, a pair of corrugated strip steel plates 8a and 8b that form the corrugated [plate-like] plate-shaped damper [member] members are inserted into this annular gap G, and a strip-like metal thin plate 10a is inserted while being clamped by the upper corrugated strip steel plate 8a and the lower corrugated strip steel plate 8b. The corrugated strip steel plates 8a and 8b are, for instance, the corrugated strip steel plates as shown in Fig. 6.

Heading beginning at line 12 of page 17 has been amended as follows:

[INDUSTRIAL APPLICABILITY]

Paragraph beginning at line 13 of page 17 has been amended as follows:

According to the present invention, there is provided a magnetic bearing apparatus provided at least with a touchdown bearing, [and] a [pair of] corrugated [plate-like] plate-shaped damper member [members] inserted into an annular gap with a retainer member thereof and [a vacuum] [pump provided with this, being provided with] a positional offset preventing means for preventing the positional offset of the corrugated plate-like damper member in the annular gap.